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or artisan so long of his ordinary wages, and throws him so far back in his little economy, that he cannot without great difficulty recover himself, and regain a state of comfort. From this inconvenience the small sum granted by the charity of the hospital relieves him, and restores him to his trade in health, strength, and spirits."

A similar regulation in the hospitals in this country, would be attended with infinite advantages to the poor and feeble invalids. An establishment in some degree resembling this plan was proposed to the inhabitants of Bristol, but I have never heard whether it was carried into execution.

E.

For the Belfast Monthly Magazine.

HINTS FOR ASTRONOMICAL PUPILS.

(From Frend's Evening Amusements.)

THE stars which are nightly presented to view may not only be made the means of rational amusement to us, but they are of use in determining the position of places of the earth. By them we can tell our distance from the equator : but, as many other persons are at the same distance, this would be of little use, unless we could tell also in what part of this circle, equally distant from the equator, we are living. The stars are again our guide. All persons living in this circle see the same stars, but at different times of the night: and, if we have a method of discovering at what time of the night a person in another place sees that star on the meridian at nine o'clock which we saw at eight o'clock, we know his position with respect to us.

For the earth turns round in twenty four hours, and this makes every star appear to turn round us in twenty-four hours. When we see a star on the meridian, the inhabitants of the same circle with us either do not see it all, or see it to the east or the west of the meridian. If they see it to the east of the meridian, and in an hour's time after see it on the meridian, then they have, by the motion of the earth, been carried in that time through one twenty-fourth part of the circle in which they live. But a twenty-fourth part of a circle is fifteen degrees, and therefore every inhabitant of the earth is made to move in an hour through fifteen degrees, and in a minute of time through a sixtieth part of fifteen degrees, or one quarter of a degree, that is, fifteen minutes of a circle.

Hence, if we know the difference of time between two places in the same circle, we can tell their position with respect to each other. For, if it is noon with us, and eleven o'clock at another place, then the persons living in that place must be moved through fifteen degrees, before the same object in the heavens will be on the meridian to them ; and as the earth moves round from west to east, these persons are fifteen degrees to the west of us, or, as it is said, they live in fifteen degrees west longitude. If it were twelve o'clock with us, and one o'clock in another place, then the persons in that place are living in fifteen degrees of east longitude.

Thus, we may make a globe to represent the earth, by taking a point in it to represent the north pole. Then make circles round this point as a centre, and fix one place, London, for example, as the place whence the position of all others may be determined. Then the line, drawn from the pole through London, may be continued all round, till it comes to the pole again, and this line will represent the meridian of London. All persons living on this line in one half of the circle, namely, the half of the circle from the pole in which London is, will have the Sun in their meridian at the same time, but to persons living in the other semicircle, it will be midnight, when it is noon in London.

At the distance of ninety degrees from the pole draw a circle round it, which will be the largest on the globe. This circle represents the equator; and it may be divided into twenty-four equal parts, beginning from the line passing through London. Then mark each part to the right or east of London, by the numbers one, two, three, &c. in succession, to twelve; and draw lines from the pole to those points, and all the persons living in these lines will reckon their time one, two, three, &c. o'clock in the afternoon, when it is noon in London.

After the point marking twelve, set off, as before, the numbers one, two, three, &c. to twelve, and the line passing through the point of twelve, will pass through the meridian and London. Hence, beginning from the line passing through London, and counting eastward, we come to the places where it is one, two, three o'clock in the afternoon, or midnight: and from midnight we pass through the places where it is one, two, three o'clock in the morning, till twelve o'clock at noon.

The persons living between any two of the lines thus drawn, will mark their time by some part of the hour between the two hours, pointed out by these lines. Thus, if a line drawn from the pole through any place, cuts the equator between the points denoting one and two o'clock, exactly midway between them, then it is half an hour past one at that place: and if we divide the space on the equator between two lines into four parts, then each part will represent a quarter of an hour; and lesser subdivisions may be made.

Knowing then what time of the day it is in any place, we can find between what lines on our globe drawn from the pole, it must be: and we ascertain the line passing through it, by the number of minutes past the hour. If the latitude is also known, then we mark from the pole, as many degrees upon the arc made from it passing through the place, as we have found from its latitude, that its distance is from the pole; and thus looking at our globe, we see in what situation, with respect to London, the place is; and this may be done till the globe shall give a person a very good notion of the position of the seas, islands, headlands, towns, and countries upon the earth.

Again, if in any part of the world we have a globe thus made, and know our position upon it with respect to London, we can, at any hour of our day, tell what o'clock it is at London. But the difficulty is, to find out what o'clock it is at London without knowing our position on the globe, and thence determining where we are. Thus, suppose a ship to have been several weeks on the Atlantic, and, to have been driven about by so violent a gale, that its reckoning is very little to be depended upon, then how is it to find out its situation? The stars come into her assistance. The astronomer royal provides the world with tables every year, and excellent rules to direct the sailor in the use of them. In these tables he marks the hour of the day, when the Moon shall be at a certain distance from certain stars. The sailor, therefore, if the Moon is above the horizon, and the sky is clear, may measure its distance from some one of these stars; and, looking at his table, will know what o'clock it is at that time at Greenwich. Looking then at his own watch, he knows what o'clock it is in the ship's place, and the difference of time is the ship's longitude from Greenwich.

Suppose the sailor to see the Moon and the first of the Eagle above the horizon, at eleven o'clock at night by his watch. He measures the distance between the Moon and this star, and finds it to be eighty-four degrees fifty-two minutes: and, looking at his table, he finds that when the Moon is at this distance from the star, it is midnight at Greenwich. Being in the Atlantic, he is to the west of Greenwich, and the difference of time being one hour, he knows that he is fifteen degrees west longitude of Greenwich. Thus the use of the stars is very great, and may save many a fine ship from destruction. Mothers, whose sons are designed to go to sea, cannot therefore too often make it their amusement, to point out the principal stars, and thus prepare them for one of the most important services in their future life.

A mother may also, by a pleasant amusement, make the daily motion of the earth very familiar to her children. She may take an orange, and holding it between the thumb and fore-finger of her right hand, so that the thumb shall be on the place where the orange grew to the twig, and the finger on the opposite point, she may turn with her left hand the orange round and round, the middle finger of the left hand being underneath the orange, and drawn from the right hand. The point where her fore-finger is, she will call the north pole of the orange; and the point where the thumb is, she will call the south pole of the orange. The line directly under the fore finger and thumb is the meridian; the part to the right hand of this line is the eastern, and to the left hand is the western hemisphere. She may now cut the rind of the orange with a knife from the point of the fore finger to the thumb in twenty-four places, each cut being as nearly at equal distances from the cut on each side as her eye will permit her to judge. Then taking a point at little more than a third of a semicircle from the north pole, let it represent London: and she may shew how London goes round her fore-finger, describing a smaller circle than places at a greater distance from London. Taking a point at equal distances from the two poles, or from her fore finger and thumb, by holding her knife properly, she will cut the orange so, that the circle will be at equal distances from finger and thumb: this she will easily make the children perceive to be the greater of the circles, in which a point can move round, and this she will call the equator. To go from London to the south pole she will shew them, that they must cross the equator: and when they hear of a place being south of the equator, she will tell them, that it must be on their orange between their thumb and the line drawn upon it for the equator. She will speak of these lines every day to her children; and, as they grow up, the ideas of north pole, south pole, equator, and meridian, will be perfectly familiar to them.

(To be continued.)

For the Belfast Monthly Magazine.

OPENING the Magazine for the last month, I turned over to